Regional policy of the EU and intra-regional differences in development levels. A case study of Lodz region.[*]

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Abstract

The regional policy of the EU attempts at minimising the scale of disparities in the level of socio-economic development of regions. Regional policy is one of the key policies of the EU as shown by the fact that over a third of the Community's budget is spent on it. The main objective of regional policy is to help backward regions to catch up, restructure declining industries, diversify agriculture as well as revitalise cities.

Poland, the largest of the new member states is at the same time one of the most lagging behind. The Structural Funds are perceived in Poland as one of the main instruments serving regional development. Since the EU and Poland put a great emphasis on regional policy it seems worthwhile to reflect upon its effectiveness.

This article does not aim at analysing the changes in the level of disparities between countries or even regions of the EU – there is sufficient literature dealing with this issue. It needs to be noted however, that there often exist far greater disparities in the level of socio-economic development within regions rather than between them. This results from the concentration of positive effects of regional policy in regional development centres.

The author aims at presenting a methodology and results of research performed in a Polish region of Lodz. It concentrated on measuring the level of socio-economic development of communes and the scale of intra-regional disparities in the Lodz region. Most available analyses of the effectiveness of regional policy concentrate on measuring the level of disparities between regions, mostly due to the fact that there is insufficient statistical material that would allow such comparisons on a lower level of territorial division. The author proposes a methodology that allows such comparisons for Polish communes. It is then tested on communes of Lodzkie (177 administrative units).

The results seem to confirm that the regions are strongly polarised – with most of the socio-economic development concentrated in the centre of the region and a peripheral area around it. This leads to a conclusion that specific actions need to be undertaken in order to fully benefit from regional policy activities.

1. Introduction

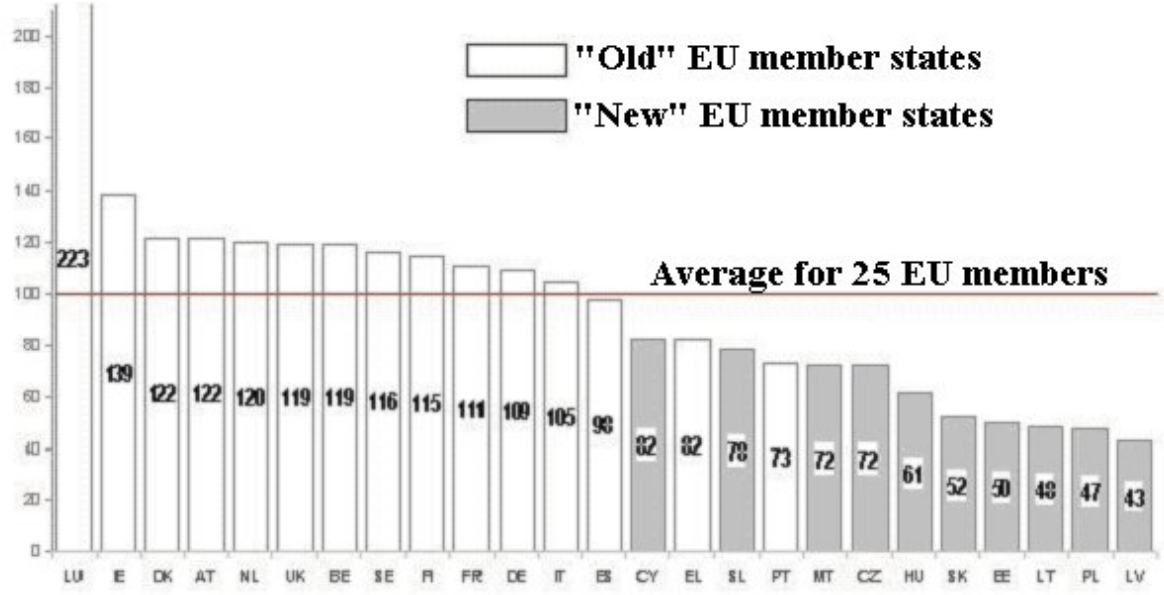
During the period between 2000 and 2006 the European Union has or will still devote around 257 billion euros (accounting for ca. 37% of the EU budget for this period) on various activities within regional policy. A vast majority of these funds is transferred to member states via Structural Funds. The greatest emphasis is put upon objective 1 of the Structural Funds, which has received funding in the amount of over 151 billion euros. These funds are to reduce the distance between the leading and most lagging regions in terms of socio-economic development through restructuring declining industries, diversifying agricultural production

[*] An earlier version of this paper has been presented during the 18th European Advanced Studies Institute in Regional Science organized in July 2005 in Lodz and Cracow, Poland and published in: T. Markowski, M. Turała, New members – new challenges for the European regional development policy, Studia Regionalia, Vol. 18, Polish Academy of Sciences, Warsaw, 2006.

as well as revitalizing down-turn urban districts[1]. Poland is currently one of the major beneficiaries of this aid - by the end of the current budgeting period of the EU Poland will have received nearly 13 billion euros from the Structural Funds and the Cohesion Fund.

It is common knowledge that the scale of disparities between regions in terms of socio-economic development is great regardless of the fact whether we look at unemployment figures or GDP *per capita* values. Picture 1 presents the scale of these disparities, which the EU regional policy is attempting to reduce. The level of GDP *per capita* in Luxembourg is many times higher than in Poland or the Baltic states. Most of the "old" EU member states have GDP *per capita* levels that are more than double the one in Poland. The only exceptions from this rule are Greece and Portugal, the GDP *per capita* of which is higher by 74.5% and 55.3% respectively.

Picture 1.
GDP per capita in EU countries in terms of EU average in 2002



Source: Eurostat News Release 75/2005 dated June 3rd, 2005.

Since the EU is spending vast amounts on its regional policy it is necessary to consider its efficiency. The goal of this paper is not to analyse the disparities in development levels between countries or even regions of the EU – there is sufficient literature available which deals with these issues. The main objective of this paper is based on a fact that the regional policy of the EU strives at decreasing the disparities in development levels between regions in Europe while neglecting the far greater disparities in development levels that may be observed

[1] See: Understanding Regional Policy – Inforegio website:
http://europe.eu.int/comm/regional_policy/intro/working1_en.htm.

on a sub-regional, local level. This fact comes about as a result of concentration of positive policy effects in regional centres of growth, which are further strengthened by the regional policy, increasing the distance separating them from the peripheral areas. The paper presents a methodology that may serve as a tool in measuring the scale of disparities in terms of socio-economic development of Polish communes (local governments which correspond to NTS-5).

Most available analyses deal with the issue of regional policy efficiency by measuring the disparities in development levels between regions mostly due to the fact that data allowing such analyses also on lower levels of territorial division is not available. What is more, carrying out such an analysis for the entire European Union would be a very complex and troublesome undertaking. However, it seems worthwhile to attempt a creation of a methodology which could serve as a basis for performing such comparisons and analyses.

This paper presents a methodology that has been applied for Polish communes and tested on a region of Lodz, containing 177 administrative units. The simplicity of the applied measuring tool should allow for using it also in other EU countries thus allowing for international comparisons.

2. Measuring socio-economic development at a local level

Economic growth of a country is often defined as an increase in the given country's capacity to produce goods and services which meet the needs of its citizens. This may be reflected by the changes in the value of GDP per capita[2]. Economic growth of a country is translated into growth on a regional as well as local levels. Local development may be perceived as a process aiming at a most effective usage of available resources (financial, human and natural) in order to create jobs and achieve beneficial social standards in a given area[3]. This approach emphasises the economic dimension of development. In terms of the social dimension development may be perceived as a process of gradual transformation of a local society which is aimed at overall progress and improved level of need fulfilment.

It seems necessary to support entrepreneurship and local initiative in order to stimulate economic development on a local level. This may be carried out through 'soft' activities like

[2] A. Alińska, Rola samorządu terytorialnego w procesie wzrostu gospodarczego, in: J. Osiński (ed.), Wzrost gospodarczy i rozwój społeczny jako paradygmaty współczesności, SGH, Warsaw, 2003, p. 363-364.
[3] A. Szewczuk, Finanse samorządowe – rozwój lokalny – nowe wyzwania, in: S. Dolata (ed.), Problemy finansowe w działalności samorządu terytorialnego, Opole, 2002, p. 54.

training courses or creating an appropriate climate for entrepreneurship or 'hard' activities – developing technical infrastructure, including roads, waterworks, telephone lines, etc.).

How should local development be measured? Because statistics rarely offer data on GDP creation at a local, communal level some other methods need to be worked out. For example, Zalewski proposes a so-called Gross Local Product which should take into consideration the state of local communal infrastructure (roads, waterworks, sewage woks, phone and internet networks), state of entrepreneurship, population, unemployment, incomes of a local budget, etc[4]. (Zalewski A., 2000). Another approach is presented in this paper.

3. Local socio-economic development index

The experiences show that in order to measure the level of development of communes it is necessary to take many factors into consideration[5]. The availability of appropriate statistical data, which greatly limits the scope of information that may be taken into consideration, is the most important obstacle in carrying out such comparative analyses. In Polish conditions it is particularly difficult to identify a set of indices that could be applied to measuring the development level of urban as well as rural communes which are functioning in predominantly different conditions. Some sets of statistical data are incomplete, some are prepared only for one type of communes (either urban or rural). However, despite all the aforementioned problems it is possible to create a set of several indices which are sufficient for outlining the spatial differentiation of socio-economic development on a local level[6].

The first step in determining a set of partial indices characterising the level of socio-economic development is the verification of available statistical data for the communal level of administrative division. All statistics presented in the paper are taken from a Bank of Regional Data (*Bank Danych Regionalnych*) published online by the Main Statistical Office in Poland[7]. After this initial verification correlations between partial development indices need to be analysed in order to eliminate coinciding indices. Ten partial development indices describing various dimensions of socio-economic development have been finally chosen and serve as a

[4] A. Zalewski, Ekonomika rozwoju lokalnego – wybrane zagadnienia, in: Samorząd terytorialny a rozwój lokalny, SGH, Warszawa, 2000, p. 22.
[5] See: A. Harańczyk, Miasta Polski w procesie globalizacji gospodarki, PWN, Warszawa 1998, p. 42-56.
[6] The author discusses the methodology of measuring socio-economic development presented in this paper in a more in-depth manner in a Ph.D. dissertation entitled "Integrated management of local government finance and socio-economic development of communes". The dissertation is currently awaiting reviews.
[7] Bank of Regional Data is available on a website of the Main Statistical Office in Poland (Główny Urząd Statystyczny): http://www.stat.gov.pl/bdr/bdrap.strona_glowna.indeks.

basis for calculating a composite socio-economic development index. The chosen indices are all stimulants of development. They are:

1. Population density;
2. Balance of migrations per 1000 inhabitants;
3. Proportion of population in the economically productive age;
4. Employment index;
5. *Per capita* incomes of a communal budget;
6. Proportion of communal budget expenditure spent on investments;
7. Water delivered to households;
8. Number of flats per 1000 inhabitants;
9. Floor surface in flats *per capita*;
10. Number of firms per 1000 inhabitants;

4. Partial development indices – description and justification

The partial development indices mentioned above were chosen so that they would reflect various dimensions of socio-economic development. The main constraint when choosing this set of indices was availability of necessary statistical data. The chosen set includes 2 indices dealing with demographical issues, 2 indices dealing with the labour market situation, 2 indices dealing with communal finance, 2 indices dealing with housing issues, 1 index dealing with communal services and 1 index dealing with economic activity.

Each of the partial development indices is briefly described below in a separate sub-section. Every sub-section includes a short characteristic of an index together with justification for using it to measure socio-economic development. Each sub-section also provides a value of Pearson's correlation coefficient which measures the correlation between the values of every partial development index calculated for all 16 Polish regions and the regional GDP *per capita* in 2002. This correlation serves as an additional information which reflects the strength of relationship between GDP levels, which are the most widely used composite indices of development, and the partial development indices chosen to measure socio-economic development of communes. It is assumed that the partial development indices which have a stronger correlation to regional GDP are better suited to reflect also the changes of development levels on a local level. The correlation coefficients may thus serve as one of possible criteria for weighting the partial development indices when combining them into a composite one.

4.1. Population density

Population density reflects the general demographical situation of every commune and is an indirect measure of an area's economic intensity and its capabilities for future development. Population density may be perceived also as a factor determining the scale of difficulties related to organising service provision for the local society and thus as a factor determining also the costs of these activities. A greater density of population should lower the unit cost of services becoming a positive impulse for development. The Pearson's correlation coefficient is: 0.3728.

The 'population density' index has been calculated for every commune by dividing the number of residents on December 31st of a given year by the overall area of a commune in hectares.

$$Population\ density = \frac{Number\ of\ residents\ on\ December\ 31^{st}}{Overall\ area\ of\ a\ commune\ in\ hectares}$$

4.2. Balance of migrations per 1000 inhabitants

This development index reflects attractiveness of a given commune to its existing as well as potential inhabitants and includes practically every aspect of development – social, economic as well as environmental. A high positive value of this index may mean high attractiveness and strong capability of attracting new inhabitants thus increasing also the development potential of a given commune. This index combines a number of factors determining migrations of people, such as environmental values or attractiveness of a local labour market, reflecting a joint impact of these factors on decisions made by the inhabitants. The Pearson's correlation coefficient is: 0.6544

The 'balance of migrations per 1000 inhabitants' index has been calculated by dividing the sum of net internal migrations and net foreign migrations by the number of residents on December 31st of a given year and multiplying the result by 1000.

$$Balance\ of\ migrations\ per\ 1000\ inhabitants = \frac{Net\ internal\ migrations + Net\ foreign\ migrations}{Number\ of\ residents\ on\ December\ 31st} \times 1000$$

4.3. Proportion of population in the economically productive age

This index allows an analysis of an economical potential of a commune's labour force. A greater value of this index implies that a greater share of inhabitants in a given commune are capable of undertaking professional activities, which is a positive sign for a local economy. The Pearson's correlation coefficient for this index is: 0.5082.

The 'proportion of population in the economically productive age' index has been calculated by dividing the number of residents in the economically productive age by the overall number of residents on December 31st of a given year and multiplying the result by 100%.

$$\textit{Proportion of population in the economically productive age} = \frac{\textit{Residents in the economically productive age on December } 31^{st}}{\textit{Number of residents on December } 31^{st}} \times 100\%$$

4.4. Employment index

This index is an explication of the one described above as it informs what percentage of people that are in an economically productive age actually have a job. A greater value of this index implies that the local economy is in a better situation and is capable of creating more jobs and absorbing the available labour force better. What is more, greater values of this index mean that the overall affluence of residents in a given commune is higher, meaning that their purchasing power is greater, providing a greater potential for endogenic development. The Pearson's correlation coefficient in this case is very high: 0.9017.

The 'employment index' index has been calculated by dividing the number of persons employed in a given commune by the number of productive age residents on December 31st of a given year and multiplying the result by 100%.

$$\textit{Employment index} = \frac{\textit{Number of persons employed in a commune}}{\textit{Number of productive age residents on December } 31^{st}} \times 100\%$$

4.5. *Per capita* incomes of a communal budget

This index reflects the basic financial dimension of development, measuring the wealth of a given local government. It is sometimes considered as an equivalent of GDP *per capita* level, which is commonly used to assess the wealth and the level of economic development of entire national or regional economies. The Pearson's correlation coefficient is even greater than for the employment index: 0.9466.

The '*per capita* incomes of a communal budget' index has been calculated by dividing the overall incomes of communal budgets by the number of residents on December 31st.

$$\text{Per capita } \textit{incomes of a communal budget} = \frac{\textit{Overall communal budget incomes}}{\textit{Number of residents on December 31st}}$$

4.6. Proportion of communal budget expenditure spent on investments

This is the second of indices referring to the financial aspect of development. It reflects the scale of investment projects – which are considered as a foundation upon which development in the economic, spatial as well as social dimension is based – undertaken by the local authorities. The greater the share of a communal budget which is spent on investment projects, the greater the multiplier effect that can be expected to occur in the local economy. The Pearson's correlation coefficient for this index is: 0.7358.

The 'Proportion of communal budget expenditure spent on investments' index has been calculated by dividing the expenditure on investments by total expenditure and multiplying the result by 100%.

$$\textit{Proportion of communal budget expenditure spent on investments} = \frac{\textit{Investment expenditure}}{\textit{Total budget expenditure}} \times 100\%$$

4.7. Water delivered to households

This index reflect the amount of water that the inhabitants of a commune use. Greater values of this index imply a greater accessibility to water pipelines, thus indirectly reflecting the level of communal infrastructure development. The Pearson's correlation coefficient calculated for this partial index is: 0.7130.

The 'water delivered to households' index has been calculated by dividing the amount of water delivered to households in a given year by the number of residents on December 31st and multiplying the result by 1000.

$$\textit{Water delivered to households} = \frac{\textit{Water delivered to households in a year}}{\textit{Number of residents on December 31st}} \times 1000$$

4.8. Number of flats per 1000 inhabitants

This is an index reflecting how many flats are available for the inhabitants. It is one of the basic measures of the living conditions as well as the condition of the housing infrastructure in a commune. The Pearson's correlation coefficient for this index is: 0.5576.

The ‘number of flats per 1000 inhabitants’ index has been calculated by dividing the number of existing flats by the number of residents on December 31st and multiplying the result by 1000.

$$\textit{Number of flats per 1000 inhabitants} = \frac{\textit{Housing resources (number of flats)}}{\textit{Number of residents on December 31st}} \times 1000$$

4.9. Floor surface in flats *per capita*

This index is complementary with the previous one as it is also used to assess the housing conditions existing in a commune. Its value is particularly important when it comes to assessing the living conditions of the inhabitants – a greater value of this index implies better housing conditions which are an important factor determining the level of socio-economic development. The Pearson’s correlation coefficient is: 0.2139.

The ‘floor surface in flats *per capita*’ index has been calculated by dividing the available area of flats by the number of residents on December 31st.

$$\textit{Area of flats} \text{ per capita} = \frac{\textit{Housing resources (area of flats)}}{\textit{Number of residents on December 31st}}$$

4.10. Number of firms per 1000 inhabitants

This is the last of selected partial indices which are used to measure the level of socio-economic development of Polish communes. This by no means implies that it is the least important one – on the contrary – it reflects the willingness of the inhabitants to undertake various forms of economic activities, initiatives and risk that is related to running a business. A higher value of this index implies that both an economic potential as well as the level of social development of a given commune are greater. The Pearson’s correlation coefficient for this partial index is: 0.7616.

The ‘number of businesses per 1000 inhabitants’ index has been calculated by dividing the number of registered businesses by the number of residents on December 31st of a given year.

$$\textit{Number of businesses per 1000 inhabitants} = \frac{\textit{Number of registered businesses}}{\textit{Number of residents on December 31st}} \times 1000$$

5. Methodology of calculating a composite socio-economic development index

The partial development indices which are briefly described above are used to calculate a single composite index reflecting the level of socio-economic development of communes – a

Composite Development Index (CDI). Various methods may be applied in order to calculate such an index – like a method of standardised sums, a method of unitary sums or a method of taxonomic development standard. This paper is based on calculations performed for communes in the region of Lodz using a method of unitary sums.

It has already been stated that the composite socio-economic development index (CDI) has been calculated for 177 administrative units in the region of Lodz using 10 partial indices dealing with chosen aspects of development. The set of statistical data which is used for calculating the CDI may be presented using a matrix **X**, composed of *n* rows and *m* columns. Every row of matrix **X** contains information describing one of the analysed administrative units (communes), while every column holds values of one of the partial development indices used in the research. In case of the Lodz region matrix **X** is composed of *n = 177* rows as well as *m = 10* columns. Matrix **X** presenting the data for 2003 has been attached as Appendix 1.

5.1. Method of unitary sums

In order to calculate a single, composite socio-economic development index for all communes in a region the values held in columns of matrix **X** need to become additive. Unitarisation, similarly to standardisation, turns all variables x_{ij} which have differing denominations into a non-denominated form (z_{ij}). Unitary values (z_{ij}) range from 0 to 1. Unitarisation has been carried out using the following formulas[8]:

$$z_{ij} = \frac{x_{ij} - \min(x_j)}{R_j}$$

for stimulants of development as well as:

$$z_{ij} = 1 + \frac{\min(x_j) - x_{ij}}{R_j}$$

for factors acting as destimulants of development.

The notation used in the above formulas is as follows:

- x_{ij} - an initial value of j[th] partial index calculated for i[th] commune which may be found in the j[th] column and i[th] row of matrix **X**;

[8] A. Becla, A. Zielińska, Elementy statystyki i metod ilościowych, I-BIS s.c., Wrocław 2003, p. 146-147.

- z_{ij} - unitarised value of j[th] partial index calculated for i[th] commune which may be found in the j[th] column and i[th] row of matrix **X**;
- $\min(x_j)$ - the lowest of initial values of the j[th] partial index (the lowest value in the j[th] column of the matrix **X**;
- R_j - difference between the highest and the lowest of initial values of the j[th] partial index;

Since all partial indices chosen for this analysis are stimulants of development only the first of the formulas presented above needed to be applied. Once the values of matrix **X** are unitarised it is possible to calculate a composite socio-economic development index (CDI) for each commune using a following formula:

$$CDI = \frac{\sum_{j=1}^{m} z_{ij}}{m}$$

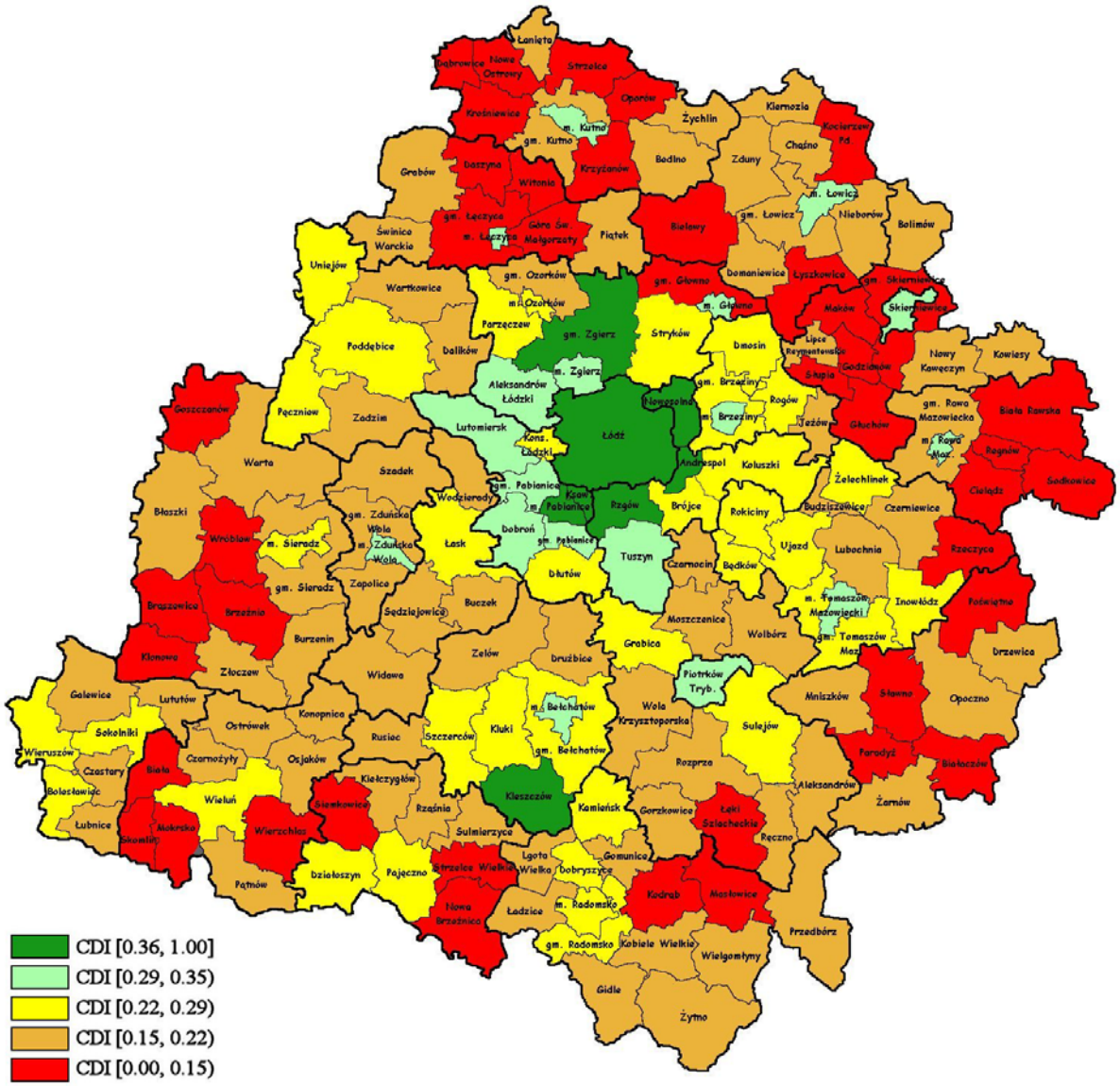
The values of CDI calculated using this formula range from 0 to 1. It needs to be emphasised that the results presented in this paper are based on an assumption that every partial index is equally important – no system of weights has been applied to the partial development indices. Once the calculations are complete it is possible to create a ranking of communes in terms of the level of socio-economic development as measured by the CDI. A ranking of communes in the Lodz region for the year 2003 has been presented in Appendix 2.

5.2. Socio-economic development of communes in the Lodz region

It has already been mentioned that the analysis encompasses 177 communes in the region of Lodz. The differences in the level of socio-economic development between particular communes are huge. The greatest value of the socio-economic development index (CDI) in the region was observed in a commune of Kleszczów (CDI = 0.6204) while the lowest value was observed in a commune of Sadkowice (CDI = 0.1035). Kleszczów is an extraordinary example which is by far the wealthiest commune in the whole of Poland, owing its position to a huge brown coal mine and a power plant located there and as such is not a suitable reference point for other communes in the region. However, the values of CDI calculated for other communes, such as a commune of Rzgów (CDI = 0.4195) or a city of Lodz (CDI = 0.4145)

are also significantly higher then a corresponding value for a commune of Sadkowice. The obtained results seem to confirm that there is a great deal to be done as far as implementation of an intra-regional policy is concerned. Such a policy should be formulated and implemented on a national level with the objective of supplementing the regional policy formulated by the European Union. It seems that entering the EU itself is not going to be enough for solving the problem of great disparities in wealth and development levels. Map 1 shows the scale of disparities on a communal level in the region of Lodz, thus showing the scale of challenges facing the intra-regional policy of Poland.

Map 1.
The level of socio-economic development of communes in the region of Lodz in 2003.



Source: prepared by the author.

Map 1 clearly shows that the area surrounding the regional capital – Lodz – concentrates most communes with a high value of a socio-economic development index. The remaining

communes which are highly developed are either a commune of Kleszczów which has already been discussed above or larger of the county capitals in the region – Piotrków Trybunalski, Skierniewice, Bełchatów, Tomaszów Mazowiecki, Zduńska Wola, Rawa Mazowiecka, Łowicz, Kutno, Łęczyca. Moving further away from the regional capital we may observe that the values of the CDI are becoming generally lower creating a peripheral system of poorly developed communes, particularly in the north-eastern part of the region.

6. Conclusions

The research conducted for the region of Lodz seems to confirm that development is concentrated in regional (capital of a region) or local (county capitals) development centres. The intra-regional disparities in the level of socio-economic development are a significant problem. This calls for a national level policy to be put in place which would allow the peripheral local governments to overturn the current negative situation in which they have found themselves. Such a policy is a necessary addition to the European Union's regional and cohesion policy which are directed at regions and may lead to an increase of intra-regional disparities as most funds and thus most effects are concentrated in the administrative and economic centres of each region which are usually the most developed areas to start with. It will be possible to draw more conclusions once statistical data becomes available for the years following Poland's accession to the EU. It will then be possible to determine whether the regional policy of the EU truly affects the scale of intra-regional disparities and how.

It is not the author's intention to suggest that the support for the more developed local governments should be stopped. This is neither possible nor welcome. The conclusion drawn from the research is however, that certain mechanisms allowing a diffusion of positive effects of regional policy from the development centres to peripheral areas should be implemented on a national level. A method presented in this paper may serve as a tool in identifying the problem areas, requiring close attention of regional policy makers.

References

Alińska A., *Rola samorządu terytorialnego w procesie wzrostu gospodarczego [Role of territorial government in economic growth]*, in: Osiński J. (ed.), *Wzrost gospodarczy i rozwój społeczny jako paradygmaty współczesności [Economic growth and social development as contemporary paradigms]*. SGH, Warsaw, 2003.

Becla A., Zielińska A., *Elementy statystyki i metod ilościowych [Elements of statistics and quantitative method]*, I-BIS s.c., Wrocław, 2003.

Eurostat News Release 75/2005 of June 3rd, 2005.

Harańczyk A., *Miasta Polski w procesie globalizacji gospodarki [Polish cities in the process of globalisation of the economy]*, PWN, Warsaw, 1998.

Markowski T, Turała M., *New members – new challenges for the European regional development policy*, Studia Regionalia, Vol. 18, Polish Academy of Sciences, Warsaw, 2006.

Szewczuk A., *Finanse samorządowe – rozwój lokalny – nowe wyzwania [Local government finance – local development – new challenges]*, in: Dolata S. (ed.), *Problemy finansowe w działalności samorządu terytorialnego [Financial problems of territorial government]*, Opole, 2002.

Turała M., *Zintegrowane zarządzanie finansami gmin a ich rozwój społeczno-gospodarczy [Integrated management of local government finance and socio-economic development of communes]*, a doctoral dissertation written in the Department of City and Regional Management, University of Lodz, 2006. At the moment the dissertation is awaiting reviews.

Zalewski A., *Ekonomika rozwoju lokalnego – wybrane zagadnienia [Local development economics – chosen aspects]*, in: *Samorząd terytorialny a rozwój lokalny [Territorial government and local development]*, SGH, Warsaw, 2000.

Websites:

Understaning Regional Policy – Inforegio: http://europa.eu.int/comm/regional_policy/intro/working1_en.htm.

Bank Danych Regionalnych GUS (Bank of Regional Data published online by the Main Statistical Office in Poland): http://www.stat.gov.pl/bdr/bdrap.strona_glowna.indeks.

Appendix 1. Matrix $\mathbf{X}_{2003}$.

Data for 2003	Population density (persons / 1ha)	Proportion of population in the economically productive age (%)	Balance of migrations per 1000 inhabitants (persons)	Employment index (%)	*Per capita* incomes of a communal budget (PLN)	Proportion of communal budget expenditure spent on investments (%)	Water delivered to households (dam^3 / 1000 persons)	Number of flats per 1000 inhabitants (flats)	Floor surface in flats *per capita* (m^2)	Number of firms per 1000 inhabitants (firms)
Kutno county										
Kutno (1)	14,434	66,68%	-2,7019	41,91%	1368,88	17,11%	34,71	360,90	20,08	97,45
Bedlno (2)	0,504	57,66%	3,1501	13,08%	1300,31	25,28%	30,24	298,79	25,02	47,88
Dąbrowice (2)	0,468	55,60%	-5,1139	10,70%	1469,78	11,33%	31,85	355,18	23,86	44,63
Krośniewice (3)	0,974	60,38%	-6,0731	16,99%	1451,47	2,24%	29,58	348,12	21,95	55,85
Krzyżanów (2)	0,447	58,27%	-8,0295	17,36%	1286,79	19,45%	29,19	295,57	24,08	47,74
Kutno (2)	0,688	59,14%	0,5939	9,76%	1115,77	12,99%	30,82	312,51	23,69	58,32
Łanięta (2)	0,490	60,30%	-1,1173	13,77%	2020,25	41,03%	17,91	300,19	18,80	45,44
Nowe Ostrowy (2)	0,558	59,91%	-2,7528	13,45%	1496,70	2,73%	22,00	343,34	21,21	41,04
Oporów (2)	0,428	57,83%	-6,8966	9,12%	1199,10	2,83%	27,69	285,86	25,99	51,03
Strzelce (2)	0,474	58,61%	-5,1498	10,86%	1328,46	3,77%	23,78	301,73	23,33	48,69
Żychlin (3)	1,730	61,93%	-3,7707	22,39%	1256,50	10,14%	31,70	371,27	20,99	71,79
Łask county										
Buczek (2)	0,531	59,49%	3,1101	8,12%	1442,75	21,19%	15,99	347,71	26,01	62,82
Łask (3)	1,946	64,34%	-0,5597	30,58%	1154,25	6,86%	28,17	358,13	23,81	96,30
Sędziejowice (2)	0,542	58,92%	-0,7672	18,15%	1433,76	15,87%	20,15	330,37	26,86	50,33
Widawa (2)	0,460	56,99%	-4,2730	16,45%	1459,05	14,71%	20,28	334,27	26,56	58,85
Wodzierady (2)	0,384	57,60%	0,0000	15,29%	1293,79	15,20%	25,07	345,50	27,12	72,37
Łęczyca county										
Łęczyca (1)	17,512	64,28%	0,5742	36,13%	1429,97	14,74%	41,21	368,60	19,15	113,44
Daszyna (2)	0,523	59,59%	-5,9004	7,01%	1207,31	18,29%	24,62	290,06	23,25	37,76
Góra Św. Małgorzaty (2)	0,521	56,64%	1,2728	8,09%	1190,63	21,46%	17,63	260,71	25,46	32,03
Grabów (2)	0,429	57,82%	-4,5188	8,08%	1361,29	28,63%	25,70	302,30	25,90	34,79
Łęczyca (2)	0,577	57,70%	-1,0346	13,85%	1149,53	12,45%	27,06	260,03	24,44	45,29
Piątek (2)	0,498	58,97%	-3,7645	14,04%	1207,20	13,43%	31,68	292,73	25,00	45,32
Świnice Warckie (2)	0,452	56,94%	-2,8282	11,30%	1309,17	17,65%	27,60	302,38	25,05	58,45
Witonia (2)	0,601	57,98%	-4,6755	9,63%	1371,93	15,35%	31,35	275,03	24,61	46,48
Eastern Lodz county										
Andrespol (2)	4,748	64,00%	21,7064	12,89%	1247,33	15,10%	28,60	369,89	30,31	99,94
Brójce (2)	0,757	60,65%	12,5332	18,25%	1461,36	8,59%	41,99	307,63	27,61	80,71
Koluszki (3)	1,456	64,47%	1,8353	23,90%	1240,80	16,40%	33,12	340,67	24,83	94,65
Nowosolna (2)	0,637	62,11%	38,9648	17,84%	1804,48	22,78%	81,56	347,78	30,57	77,64
Rzgów (2)	1,340	64,07%	14,9271	26,56%	1830,18	36,99%	41,50	335,07	32,62	131,74
Tuszyn (3)	0,901	61,99%	3,1855	28,78%	2339,26	42,32%	29,11	359,19	28,80	116,32
Pabianice county										
Konstantynów Łódzki (1)	6,524	65,04%	2,4529	26,18%	1107,43	8,56%	37,70	369,71	24,30	91,50
Pabianice (1)	21,807	64,45%	-3,3648	35,49%	1098,31	9,97%	43,81	419,05	22,52	117,87
Dłutów (2)	0,404	60,83%	9,8425	8,05%	1271,24	11,00%	27,98	407,73	29,51	72,59
Dobroń (2)	0,707	61,80%	14,6794	13,86%	1208,11	23,24%	32,88	324,60	29,07	86,73
Ksawerów (2)	5,163	64,02%	8,6611	41,27%	1564,02	32,51%	22,82	333,95	28,73	147,95
Lutomiersk (2)	0,519	60,16%	15,1166	18,98%	1243,15	9,72%	48,59	380,79	29,33	80,33
Pabianice (2)	0,618	60,11%	18,6472	9,15%	1985,58	12,77%	43,80	366,18	29,82	95,43
Poddębice county										
Dalików (2)	0,333	57,82%	2,6631	24,78%	1422,82	16,80%	21,76	336,09	26,37	55,66

Pęczniew (2)	0,294	57,31%	-2,3866	12,31%	1419,81	9,92%	30,71	377,62	32,41	65,23
Poddębice (3)	0,712	62,92%	0,1877	28,04%	1189,64	18,21%	34,91	339,13	24,42	97,40
Uniejów (3)	0,571	59,53%	-4,7503	11,24%	1366,33	19,28%	25,69	360,61	26,75	71,25
Wartkowice (2)	0,455	57,85%	-0,6194	20,18%	1368,26	18,77%	30,35	296,69	23,46	55,44
Zadzim (2)	0,381	57,22%	-3,2686	8,00%	1414,16	12,05%	22,79	329,94	27,51	56,29
Sieradz county										
Sieradz (1)	8,690	65,01%	-3,1003	43,49%	1279,10	14,70%	32,09	339,91	21,71	106,40
Błaszki (3)	0,759	59,40%	-2,2871	10,50%	1205,53	20,74%	23,54	280,34	24,32	60,45
Brąszewice (2)	0,425	54,75%	0,6634	12,00%	1534,25	14,74%	20,79	257,85	23,99	52,41
Brzeźnio (2)	0,492	57,08%	0,6314	17,51%	1377,26	8,69%	30,45	278,61	25,07	58,88
Burzenin (2)	0,489	58,55%	3,7820	9,75%	1405,68	10,30%	24,57	306,52	22,66	64,81
Goszczanów (2)	0,479	56,07%	-3,3973	6,39%	1375,65	19,71%	32,48	265,84	25,81	37,54
Klonowa (2)	0,323	55,05%	0,3248	8,85%	1393,41	3,82%	26,83	292,63	26,99	50,99
Sieradz (2)	0,534	59,10%	6,3911	14,18%	1138,81	20,83%	22,81	270,69	23,87	61,54
Warta (3)	0,524	57,46%	0,1509	17,11%	1245,55	18,80%	18,43	293,99	23,94	57,50
Wróblew (2)	0,554	58,07%	-4,7816	16,91%	1330,75	11,20%	32,61	281,00	26,47	45,11
Złoczew (3)	0,636	59,15%	-1,3328	24,25%	1323,81	21,69%	29,96	276,56	21,56	75,17
Wieluń county										
Biała (2)	0,735	58,18%	-3,9935	5,80%	1311,02	4,38%	21,66	266,65	26,72	53,73
Czarnożyły (2)	0,659	56,94%	3,6932	17,40%	1474,02	24,22%	27,37	270,69	24,05	61,48
Konopnica (2)	0,483	58,66%	-6,4789	11,89%	1260,84	11,59%	31,15	328,68	28,27	58,06
Mokrsko (2)	0,704	58,23%	-1,4623	14,12%	1275,00	11,76%	23,03	271,80	24,74	51,54
Osjaków (2)	0,468	57,72%	1,4843	14,22%	1287,86	11,09%	23,45	317,64	26,65	68,70
Ostrówek (2)	0,456	58,82%	-0,4319	9,07%	1534,84	24,63%	29,60	286,98	24,49	47,51
Pątnów (2)	0,571	57,34%	-3,3737	7,44%	1490,90	27,14%	14,66	252,72	25,11	61,19
Skomlin (2)	0,636	59,23%	-3,1474	7,10%	1412,25	14,55%	25,15	274,68	25,48	42,63
Wieluń (3)	2,511	63,34%	-1,8515	44,04%	1230,48	20,82%	25,19	335,34	23,40	115,07
Wierzchlas (2)	0,556	57,69%	0,1509	6,22%	1324,02	13,04%	29,64	270,18	24,80	56,12
Wieruszów county										
Bolesławiec (2)	0,648	60,35%	3,8259	10,97%	1753,44	38,27%	25,35	307,75	28,70	61,69
Czastary (2)	0,652	59,00%	-0,4898	23,99%	1281,07	19,98%	17,39	287,29	25,72	60,00
Galewice (2)	0,455	58,92%	0,9704	17,16%	1295,49	19,86%	41,94	275,27	25,44	46,42
Lututów (2)	0,647	58,12%	-1,8503	16,41%	1374,84	14,68%	28,10	303,04	25,59	64,56
Łubnice (2)	0,691	57,95%	0,2376	16,15%	1364,52	42,34%	31,55	244,24	25,79	56,31
Sokolniki (2)	0,614	59,46%	1,4239	19,71%	1477,33	31,13%	22,31	281,73	28,33	62,04
Wieruszów (3)	1,459	64,06%	1,1998	48,22%	1403,14	15,24%	31,60	314,42	25,17	100,43
Zduńska Wola county										
Zduńska Wola (1)	18,194	64,16%	-3,1753	41,92%	1149,06	3,77%	29,83	353,98	21,93	100,72
Szadek (3)	0,490	58,99%	0,2689	18,87%	1266,02	12,68%	28,05	311,20	24,32	62,78
Zapolice (2)	0,578	59,40%	-0,2134	10,63%	1273,85	20,44%	14,53	311,71	23,40	52,49
Zduńska Wola (2)	0,988	59,75%	10,6190	22,95%	1184,76	27,56%	23,94	293,07	22,47	63,53
Zgierz county										
Głowno (1)	7,666	64,22%	-2,1061	23,84%	1214,88	12,47%	35,26	376,14	25,46	111,62
Ozorków (1)	13,448	64,55%	-1,0575	22,39%	1261,66	1,93%	32,75	373,05	20,51	79,89
Zgierz (1)	13,753	65,36%	1,5120	28,78%	1263,39	5,25%	35,13	385,30	22,42	110,74
Aleksandrów Łódzki (3)	2,218	65,63%	12,9870	18,94%	1135,71	11,63%	43,06	380,91	24,70	117,27
Głowno (2)	0,487	57,08%	0,0000	3,51%	942,01	9,52%	30,70	291,47	24,65	45,60
Ozorków (2)	0,677	59,17%	-1,3966	17,65%	1627,95	20,96%	63,89	305,25	26,34	54,00
Parzęczew (2)	0,527	61,45%	-6,0296	7,43%	1260,39	29,54%	41,53	342,59	23,96	53,54
Stryków (3)	0,763	62,88%	10,8768	25,72%	1243,98	8,66%	29,95	349,63	26,62	77,96
Zgierz (2)	0,555	60,41%	13,2839	16,11%	1367,95	17,92%	41,71	493,67	36,82	85,22
Brzeziny county										
Brzeziny (1)	5,769	66,81%	-0,1607	28,09%	1401,47	20,23%	37,75	347,34	22,78	114,47
Brzeziny (2)	0,486	59,48%	12,5652	11,02%	1106,20	19,77%	41,23	330,95	25,92	72,49
Dmosin (2)	0,471	59,41%	-1,6895	7,96%	1407,66	24,83%	31,59	335,16	25,55	68,22

Jeżów (2)	0,574	59,37%	-3,5471	14,20%	1473,74	17,79%	25,24	337,52	25,15	62,21
Rogów (2)	0,705	61,62%	3,0004	13,15%	1345,18	11,08%	30,71	349,12	27,10	68,37
Bełchatów county										
Bełchatów (1)	18,097	69,44%	-8,9517	23,50%	1421,44	12,48%	32,71	314,57	21,17	100,85
Bełchatów (2)	0,488	59,26%	23,3538	16,22%	1386,08	24,83%	20,92	328,78	27,40	52,86
Drużbice (2)	0,426	59,77%	-0,2048	12,26%	1343,32	15,14%	27,85	332,31	27,56	56,51
Kleszczów (2)	0,306	59,47%	37,7062	770,19%	34478,05	38,17%	160,17	305,58	28,99	65,99
Kluki (2)	0,320	57,41%	21,0859	16,71%	1427,90	21,31%	29,20	341,59	27,43	45,60
Rusiec (2)	0,546	57,64%	5,1414	18,38%	1413,54	10,15%	25,71	333,46	26,96	62,43
Szczerców (2)	0,586	59,05%	7,2838	23,88%	1874,89	38,55%	32,41	331,35	27,36	62,77
Zelów (3)	0,909	60,16%	2,6811	19,62%	1272,45	21,56%	11,06	361,50	23,90	63,30
Łowicz county										
Łowicz (1)	13,042	66,07%	-3,6683	37,77%	1272,64	17,85%	39,07	362,83	23,58	103,04
Bielawy (2)	0,376	57,98%	-3,4058	13,45%	1213,37	7,42%	31,32	327,44	25,13	45,25
Chąśno (2)	0,448	54,21%	-8,3877	9,34%	1062,53	15,88%	69,68	262,81	29,22	54,36
Domaniewice (2)	0,539	59,61%	-0,8602	8,04%	1398,65	19,19%	51,85	286,45	26,40	53,12
Kiernozia (2)	0,481	58,50%	-2,1858	8,22%	1369,08	19,45%	49,32	324,86	27,88	55,19
Kocierzew Południowy (2)	0,505	55,66%	-5,0772	16,12%	1094,15	9,05%	38,50	253,23	25,88	41,25
Łowicz (2)	0,558	56,25%	4,2993	14,69%	1342,62	17,17%	48,89	273,55	27,14	54,95
Łyszkowice (2)	0,658	56,70%	-0,9950	14,11%	1259,46	8,16%	43,91	280,88	24,82	42,50
Nieborów (2)	0,922	59,78%	4,6214	12,79%	1212,34	16,66%	29,41	294,40	25,83	50,52
Zduny (2)	0,483	56,39%	-4,3534	9,61%	1260,64	16,84%	49,98	297,48	31,08	51,27
Opoczno county										
Białaczów (2)	0,529	54,54%	-0,8248	18,15%	1289,35	16,09%	18,84	342,30	24,17	36,79
Drzewica (3)	0,950	59,91%	-3,0230	15,81%	1327,95	23,36%	17,60	290,66	21,54	60,02
Mniszków (2)	0,390	56,32%	-5,3797	12,86%	1337,54	19,40%	21,52	313,68	25,84	53,59
Opoczno (3)	1,859	62,04%	-1,6663	33,97%	1496,35	21,96%	24,62	303,70	20,69	84,76
Paradyż (2)	0,550	55,62%	-6,0147	17,46%	1571,07	15,39%	17,84	287,81	24,06	44,11
Poświętne (2)	0,245	55,89%	-3,7703	7,63%	1323,96	2,18%	32,71	303,07	24,73	58,29
Sławno (2)	0,584	55,79%	-5,8674	12,33%	1444,74	24,52%	23,02	271,77	21,98	46,54
Żarnów (2)	0,454	54,87%	-3,7570	11,75%	1551,95	24,64%	16,91	371,95	28,35	50,25
Pajęczno county										
Działoszyn (3)	1,081	60,28%	-3,9140	29,58%	1498,60	38,04%	35,34	285,57	22,88	85,11
Kiełczygłów (2)	0,487	57,57%	-0,6840	11,60%	1243,43	32,92%	28,13	284,31	26,87	63,84
Nowa Brzeźnica (2)	0,375	57,59%	-2,5475	8,13%	1179,03	0,64%	17,26	322,95	24,38	44,88
Pajęczno (3)	1,035	62,44%	-3,6624	23,65%	1275,09	30,90%	26,15	304,15	23,45	91,39
Rząśnia (2)	0,564	55,06%	-7,3846	9,28%	2219,39	49,47%	31,90	290,87	25,05	56,21
Siemkowice (2)	0,526	57,58%	1,3659	8,07%	1281,35	3,66%	13,50	269,66	23,77	47,22
Strzelce Wielkie (2)	0,642	59,06%	0,4012	12,94%	1225,50	7,57%	27,46	307,52	23,83	40,52
Sulmierzyce (2)	0,584	58,60%	-1,0356	12,48%	1310,42	21,93%	38,32	307,58	23,95	43,91
Piotrków Trybunalski county										
Aleksandrów (2)	0,322	55,42%	-1,7271	9,86%	1337,76	16,25%	19,02	366,36	26,60	35,62
Czarnocin (2)	0,570	58,66%	-7,4717	11,01%	1501,83	21,78%	43,94	284,65	26,80	72,07
Gorzkowice (2)	0,850	59,86%	-0,6902	17,95%	1321,41	16,80%	21,06	315,43	24,15	48,89
Grabica (2)	0,482	57,97%	3,2610	7,31%	1428,12	39,17%	29,40	293,33	26,02	64,08
Łęki Szlacheckie (2)	0,346	54,45%	-2,1333	9,70%	1341,08	17,49%	25,47	343,20	24,51	41,33
Moszczenica (2)	1,146	60,08%	3,5968	19,31%	1299,97	21,20%	24,04	311,20	25,01	55,52
Ręczno (2)	0,417	56,65%	0,0000	6,27%	1462,98	14,53%	32,56	311,09	25,83	51,40
Rozprza (2)	0,734	59,82%	-0,1676	14,37%	1303,75	16,90%	25,64	284,37	22,78	41,39
Sulejów (3)	0,804	60,47%	9,9777	16,11%	1109,44	10,77%	25,51	328,87	25,84	75,82
Wola Krzysztoporska (2)	0,674	58,51%	0,4355	13,40%	1343,55	11,05%	56,14	274,69	24,14	54,17
Wolbórz (2)	0,509	59,62%	3,8941	38,21%	1378,29	20,46%	31,33	304,13	25,46	63,21
Radomsko county										
Radomsko (1)	9,657	63,35%	-2,5560	39,29%	1282,11	8,52%	35,24	358,99	22,90	102,94
Dobryszyce (2)	0,813	59,71%	6,7389	18,94%	1365,22	25,87%	45,42	315,76	26,17	72,92

Gidle (2)	0,578	58,82%	-2,0812	8,95%	1301,26	18,11%	10,82	356,03	24,77	67,64
Gomunice (2)	0,961	60,20%	-0,3328	13,32%	1270,09	18,02%	24,03	344,43	24,07	63,73
Kamieńsk (3)	0,637	58,88%	8,5148	18,35%	1534,59	17,40%	23,83	346,16	26,13	59,77
Kobiele Wielkie (2)	0,438	59,36%	-3,8082	6,91%	1322,27	26,31%	28,61	294,13	24,65	64,96
Kodrąb (2)	0,449	58,59%	-2,1061	7,94%	1336,97	7,47%	25,57	305,18	24,04	50,34
Lgota Wielka (2)	0,705	57,82%	-2,4719	9,29%	1516,06	31,84%	37,53	280,90	24,46	55,06
Ładzice (2)	0,599	60,10%	5,8491	22,92%	1405,48	28,24%	44,82	270,27	22,25	54,66
Masłowice (2)	0,381	56,91%	-1,5826	7,07%	1196,46	6,49%	16,73	331,45	25,37	45,22
Przedbórz (3)	0,410	58,66%	-4,6219	16,04%	1344,69	7,72%	21,16	335,86	24,24	87,30
Radomsko (2)	0,658	61,14%	10,5020	11,47%	1094,70	20,33%	23,44	291,38	23,61	75,29
Wielgomłyny (2)	0,408	57,64%	-2,5865	17,50%	1307,81	32,04%	21,27	321,53	26,82	47,35
Żytno (2)	0,300	57,08%	-3,0359	8,51%	1506,21	27,59%	14,17	366,00	25,64	40,31
Rawa Mazowiecka county										
Rawa Mazowiecka (1)	13,010	66,67%	-6,1291	43,60%	1543,54	13,96%	30,89	330,35	20,84	122,36
Biała Rawska (3)	0,563	58,96%	-4,3460	10,90%	1374,11	16,49%	17,44	306,95	22,52	52,66
Cielądz (2)	0,441	56,21%	-3,1431	5,51%	1432,60	16,46%	32,01	295,94	22,32	47,87
Rawa Mazowiecka (2)	0,519	57,96%	2,4665	11,83%	1070,49	17,28%	30,93	290,70	22,15	56,50
Regnów (2)	0,408	53,98%	-1,0753	4,88%	1547,63	20,33%	16,61	306,99	25,42	46,77
Sadkowice (2)	0,479	56,42%	0,0000	5,57%	1249,64	5,81%	16,15	290,89	24,63	33,30
Skierniewice county										
Bolimów (2)	0,361	59,63%	-1,2330	12,37%	1294,19	11,52%	23,48	313,19	24,64	56,97
Głuchów (2)	0,551	55,70%	-0,1630	12,85%	1284,84	8,42%	37,69	249,71	24,10	53,30
Godzianów (2)	0,622	55,91%	-5,4705	7,63%	1466,09	26,80%	38,69	253,46	23,24	55,80
Kowiesy (2)	0,361	56,66%	0,0000	7,03%	1384,56	13,96%	24,59	388,08	29,62	54,75
Lipce Reymontowskie (2)	0,799	58,37%	4,9810	9,99%	1354,96	25,81%	32,87	284,50	25,01	53,91
Maków (2)	0,730	56,90%	0,9911	7,87%	1242,51	15,80%	21,26	266,11	22,87	41,63
Nowy Kawęczyn (2)	0,318	55,55%	2,1053	9,96%	1391,97	17,64%	31,97	357,29	25,06	53,23
Skierniewice (2)	0,514	57,35%	-4,1347	14,03%	1188,51	9,34%	22,15	304,05	23,56	59,81
Słupia (2)	0,657	57,69%	-4,4346	6,85%	1299,13	10,45%	30,86	262,75	22,25	45,08
Tomaszów Mazowiecki county										
Tomaszów Mazowiecki (1)	16,313	64,09%	-0,6828	32,91%	1114,09	10,21%	38,89	380,04	21,84	102,28
Będków (2)	0,624	57,78%	0,8310	9,01%	1355,08	28,25%	39,34	305,82	28,82	67,59
Budziszewice (2)	0,745	59,04%	-9,3500	6,94%	1290,54	12,82%	29,43	334,82	25,38	76,58
Czerniewice (2)	0,404	59,31%	-0,7753	10,26%	1333,12	23,44%	23,18	287,65	21,90	65,13
Inowłódz (2)	0,394	58,99%	1,5524	26,71%	1730,89	11,81%	31,44	375,16	27,50	74,77
Lubochnia (2)	0,577	60,55%	-3,4251	10,62%	1387,97	25,63%	19,76	308,52	22,01	56,25
Rokiciny (2)	0,657	60,07%	3,0278	17,84%	1525,44	27,96%	31,47	322,12	27,88	67,12
Rzeczyca (2)	0,468	55,62%	-3,5517	8,62%	1497,94	26,35%	32,72	280,98	22,25	46,37
Tomaszów Mazowiecki (2)	0,634	60,97%	5,1084	12,45%	1208,81	16,58%	35,48	296,08	25,65	73,29
Ujazd (2)	0,805	62,70%	-2,8191	23,71%	1410,20	18,66%	27,34	337,01	23,84	78,68
Żelechlinek (2)	0,386	56,84%	-0,5631	12,13%	1522,60	47,48%	21,31	362,61	24,43	43,64
City of Piotrków Trybunalski										
Piotrków Trybunalski (1)	11,970	65,87%	-3,3660	41,10%	1923,14	5,76%	33,94	359,62	21,07	107,13
City of Skierniewice										
Skierniewice (1)	14,810	66,07%	1,2123	38,03%	1947,57	13,23%	33,08	364,56	22,90	98,05
City of Łódź										
Łódź (1)	26,466	65,53%	-1,2283	38,61%	1943,18	11,39%	50,88	425,22	22,30	118,52
Arithmetical average	2,032	59,42%	0,704	20,83%	1556,95	17,80%	30,69	318,03	25,07	65,35
Standard deviation	4,388	2,97%	7,001	57,45%	2496,65	9,27%	14,13	39,04	2,58	22,42
Minimum value	0,245	53,98%	-9,350	3,51%	942,01	0,64%	10,82	244,24	18,80	32,03
Maximum value	26,466	69,44%	38,965	770,19%	34478,05	49,47%	160,17	493,67	36,82	147,95

Source: prepared by the author based on Polish Main Statistical Office (GUS) data.

Appendix 2. Ranking of communes in the region of Lodz for the year 2003 prepared using a non-weighted socio-economic development index (CDI) calculated using a method of unitary sums.

Rank	Commune	CDI
1	Kleszczów (2)	0,6204
2	Rzgów (2)	0,4195
3	Łódź (1)	0,4145
4	Nowosolna (2)	0,3974
5	Zgierz (2)	0,3945
6	Ksawerów (2)	0,3921
7	Pabianice (1)	0,3729
8	Andrespol (2)	0,3627
9	Tuszyn (3)	0,3596
10	Aleksandrów Łódzki (3)	0,3368
11	Łowicz (1)	0,3337
12	Skierniewice (1)	0,3318
13	Łęczyca (1)	0,3299
14	Zgierz (1)	0,3221
15	Brzeziny (1)	0,3203
16	Tomaszów Mazowiecki (1)	0,3193
17	Kutno (1)	0,3164
18	Pabianice (2)	0,3145
19	Bełchatów (1)	0,3126
20	Głowno (1)	0,3121
21	Rawa Mazowiecka (1)	0,3089
22	Dobroń (2)	0,3017
23	Lutomiersk (2)	0,2933
24	Zduńska Wola (1)	0,2924
25	Piotrków Trybunalski (1)	0,2915
26	Konstantynów Łódzki (1)	0,2897
27	Sieradz (1)	0,2844
28	Dłutów (2)	0,2789
29	Radomsko (1)	0,2787
30	Wieluń (3)	0,2755
31	Szczerców (2)	0,2750
32	Koluszki (3)	0,2725
33	Bolesławiec (2)	0,2662
34	Wieruszów (3)	0,2652
35	Bełchatów (2)	0,2616
36	Poddębice (3)	0,2610
37	Stryków (3)	0,2597
38	Ozorków (1)	0,2590
39	Dobryszyce (2)	0,2555
40	Brzeziny (2)	0,2520
41	Rokiciny (2)	0,2519
42	Łask (3)	0,2491
43	Brójce (2)	0,2473
44	Pajęczno (3)	0,2464
45	Kluki (2)	0,2419
46	Działoszyn (3)	0,2382
47	Będków (2)	0,2357
48	Inowłódz (2)	0,2353
49	Grabica (2)	0,2335
50	Rogów (2)	0,2333
51	Żelechlinek (2)	0,2318
52	Ujazd (2)	0,2295
53	Pęczniew (2)	0,2287
54	Sulejów (3)	0,2276
55	Sokolniki (2)	0,2268
56	Parzęczew (2)	0,2240
57	Dmosin (2)	0,2224
58	Kamieńsk (3)	0,2224
59	Radomsko (2)	0,2221
60	Tomaszów Mazowiecki (2)	0,2221
61	Uniejów (3)	0,2216
62	Buczek (2)	0,2182
63	Ozorków (2)	0,2180
64	Zduńska Wola (2)	0,2158
65	Zelów (3)	0,2157
66	Kiernozia (2)	0,2138
67	Wolbórz (2)	0,2129
68	Kowiesy (2)	0,2127
69	Opoczno (3)	0,2125
70	Kiełczygłów (2)	0,2100
71	Łubnice (2)	0,2091
72	Wodzierady (2)	0,2069
73	Drużbice (2)	0,2055
74	Moszczenica (2)	0,2054
75	Rząśnia (2)	0,2052
76	Gomunice (2)	0,2051
77	Ładzice (2)	0,2047
78	Żychlin (3)	0,2029
79	Wielgomłyny (2)	0,2012
80	Domaniewice (2)	0,1998
81	Czarnocin (2)	0,1987
82	Lipce Reymontowskie (2)	0,1980
83	Rusiec (2)	0,1949
84	Jeżów (2)	0,1946
85	Żarnów (2)	0,1942
86	Zduny (2)	0,1940
87	Kobiele Wielkie (2)	0,1940
88	Dalików (2)	0,1939
89	Gidle (2)	0,1939
90	Nieborów (2)	0,1914
91	Lgota Wielka (2)	0,1911
92	Żytno (2)	0,1870
93	Sędziejowice (2)	0,1867
94	Bedlno (2)	0,1865
95	Łanięta (2)	0,1849
96	Budziszewice (2)	0,1848
97	Osjaków (2)	0,1844
98	Konopnica (2)	0,1841
99	Łowicz (2)	0,1840
100	Nowy Kawęczyn (2)	0,1837
101	Sieradz (2)	0,1823
102	Czastary (2)	0,1799
103	Lubochnia (2)	0,1799
104	Przedbórz (3)	0,1796
105	Galewice (2)	0,1789
106	Sulmierzyce (2)	0,1769
107	Ostrówek (2)	0,1768
108	Złoczew (3)	0,1767
109	Lututów (2)	0,1764
110	Szadek (3)	0,1764
111	Czarnożyły (2)	0,1757
112	Gorzkowice (2)	0,1741
113	Czerniewice (2)	0,1730
114	Kutno (2)	0,1729
115	Błaszki (3)	0,1726
116	Widawa (2)	0,1715
117	Zadzim (2)	0,1711
118	Zapolice (2)	0,1704
119	Grabów (2)	0,1698
120	Bolimów (2)	0,1683
121	Wola Krzysztoporska (2)	0,1663
122	Drzewica (3)	0,1659
123	Ręczno (2)	0,1647
124	Wartkowice (2)	0,1646
125	Burzenin (2)	0,1635
126	Świnice Warckie (2)	0,1624
127	Chąśno (2)	0,1606
128	Aleksandrów (2)	0,1602
129	Warta (3)	0,1586
130	Rawa Mazowiecka (2)	0,1586
131	Pątnów (2)	0,1579
132	Mniszków (2)	0,1574
133	Piątek (2)	0,1524
134	Rozprza (2)	0,1506
135	Krośniewice (3)	0,1498
136	Wierzchlas (2)	0,1488
137	Krzyżanów (2)	0,1484
138	Bielawy (2)	0,1483
139	Skomlin (2)	0,1467
140	Biała Rawska (3)	0,1465
141	Brzeźnio (2)	0,1462
142	Godzianów (2)	0,1451
143	Wróblew (2)	0,1447
144	Łęki Szlacheckie (2)	0,1441
145	Strzelce Wielkie (2)	0,1426
146	Dąbrowice (2)	0,1420
147	Kodrąb (2)	0,1405
148	Witonia (2)	0,1399
149	Mokrsko (2)	0,1398
150	Rzeczyca (2)	0,1393
151	Daszyna (2)	0,1392
152	Regnów (2)	0,1385
153	Białaczów (2)	0,1355
154	Masłowice (2)	0,1355
155	Skierniewice (2)	0,1355
156	Głowno (2)	0,1349
157	Goszczanów (2)	0,1343
158	Łyszkowice (2)	0,1335
159	Góra Świętej Małgorzaty (2)	0,1324
160	Cielądz (2)	0,1303
161	Nowe Ostrowy (2)	0,1288
162	Łęczyca (2)	0,1286
163	Biała (2)	0,1281
164	Klonowa (2)	0,1277
165	Poświętne (2)	0,1225
166	Maków (2)	0,1213
167	Sławno (2)	0,1211
168	Oporów (2)	0,1209
169	Strzelce (2)	0,1193
170	Głuchów (2)	0,1174
171	Nowa Brzeźnica (2)	0,1172
172	Brąszewice (2)	0,1167
173	Paradyż (2)	0,1144
174	Kocierzew Południowy (2)	0,1094
175	Słupia (2)	0,1086
176	Siemkowice (2)	0,1070
177	Sadkowice (2)	0,1035

where:
(1) means an urban commune;
(2) means a rural commune;
(3) means an urban-rural commune.